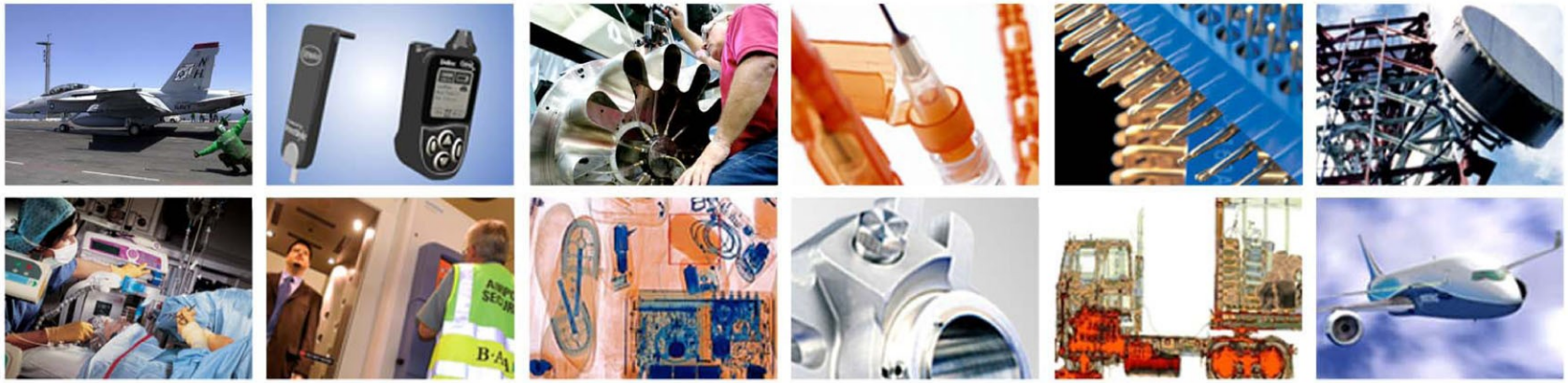
Smiths Aerospace

Sense and Respond Logistics Forum
Defense Acquisition University

September 21, 2006



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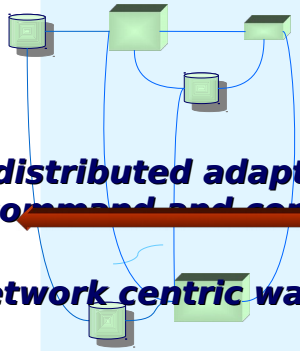
S&RL OV-1 Top Level Concept

total situation awareness emphasis on commander's intent

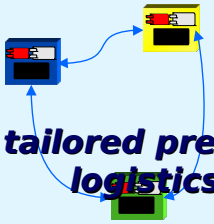
force capabilities management: logistics fully integrated with operations and intelligence

full spectrum asset visibility



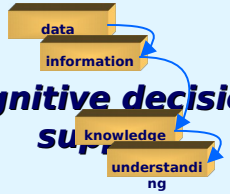
distributed adaptive command and control

network centric warfare



tailored precise logistics

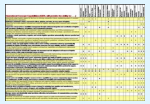
speed vs. mass effectiveness vs. efficiency



cognitive decision support

kinetic and potential logistics across range of military operations

anticipatory proactive logistics, alter initial conditions



S&RL operational capabilities

End to End Information Systems

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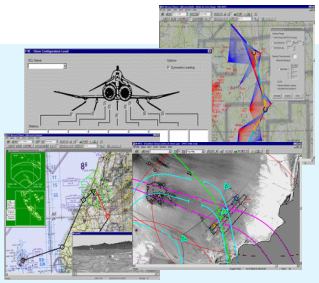


Planning & Analysis

Transport

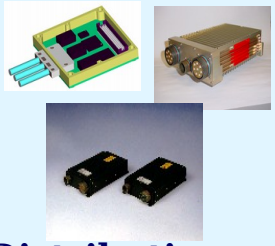
Acquisition

Storage

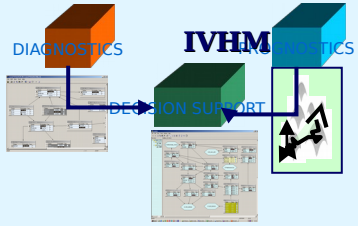
Networked Ground and Vehicle Systems for planning, analysis, transport, acquisition, storage, processing, and distribution of information

Debrief & Analysis

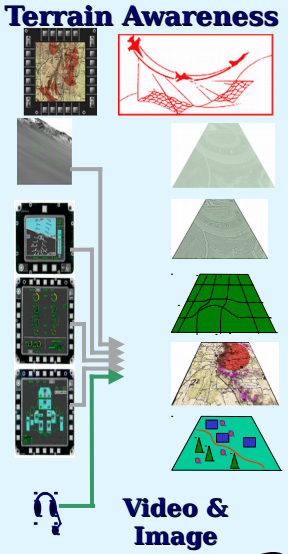
Transport



Distribution
(Network Architectures)



Information Processing



Terrain Awareness

Video & Image Processing

Market Trends

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- Capability not asset procurement by DOD/MOD
- Reduced asset supply / increase service content for primes
- Primes managing the fleet
  - Information that can help minimise maintenance and operational costs will be one of the key enablers for Primes to grow margins

Non-Aerospace

- Effective use of information is differentiating successful business
  - Wall Mart / Tesco – leaders in optimising retail business through the use of information derived from large quantities of data
  - Aggressive bank lending through more effective risk management
  - Amazon - using information exploitation technology to target cross marketing

Information Exploitation Description

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What is Information Exploitation

- **Provision of Intelligent tools to provide the Maintenance manager , Fleet Manager or Design Authority with information and decision making aids**
  - Conversion of data to information that provides direct benefits
- **Provision of services to support data management, information generation either as an**
  - Information provider – or-
  - Risk sharing partner in the provision of end benefit (Reduced O/S costs etc.)

- **Key Elements**
  - **Centralized warehousing of vehicle health and usage data**
  - **Application of intelligent tools to extract value from data**
  - **Web based data /information presentation/ access**
  - **Provision of decision making aid to end user**
  - **Integration of IVHM data with other Ground data management systems (Maintenance management / Logistics systems)**

Customer's needs

- Increased vehicle Readiness
- Reduced Cost of vehicle ownership
- Fleet Asset management
- Increased Safety
- Increased vehicle Performance

Basic premise

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Fundamental Assumption

Unlocking information derived from vehicle data collection systems (eg. HUMS) has significant potential to reduce vehicle operating and maintenance through life cost .

Characterisation of HUMS today

- Well exploited for safety benefit but poorly exploited for maintenance cost reduction and fleet management
- Inaccessibility of HUMS data within operators organisation
- Large quantities of data but limited high grade information to support decision making

Key enablers to unlock the value

- Support contracts based upon asset availability or power by the hour which financially incentivise reduction in maintenance cost
- Centralised management providing accessibility of the data coupled with the application of information exploitation tools
- Knowledge of aircraft operating environment in order to determine what information can add value and how the value can be quantified
- Design Authority support to change maintenance practices or improve asset reliability

‘Insight’

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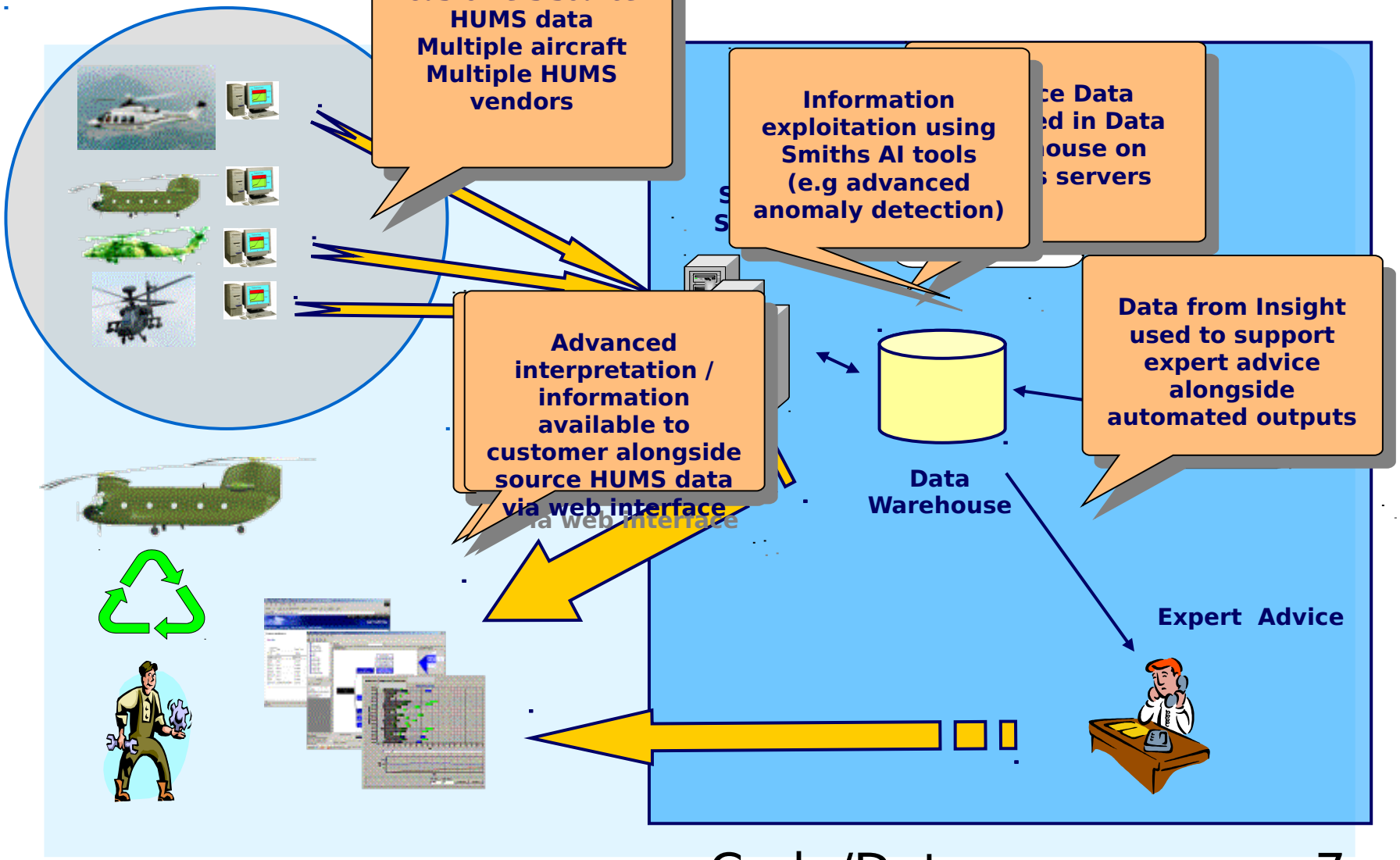
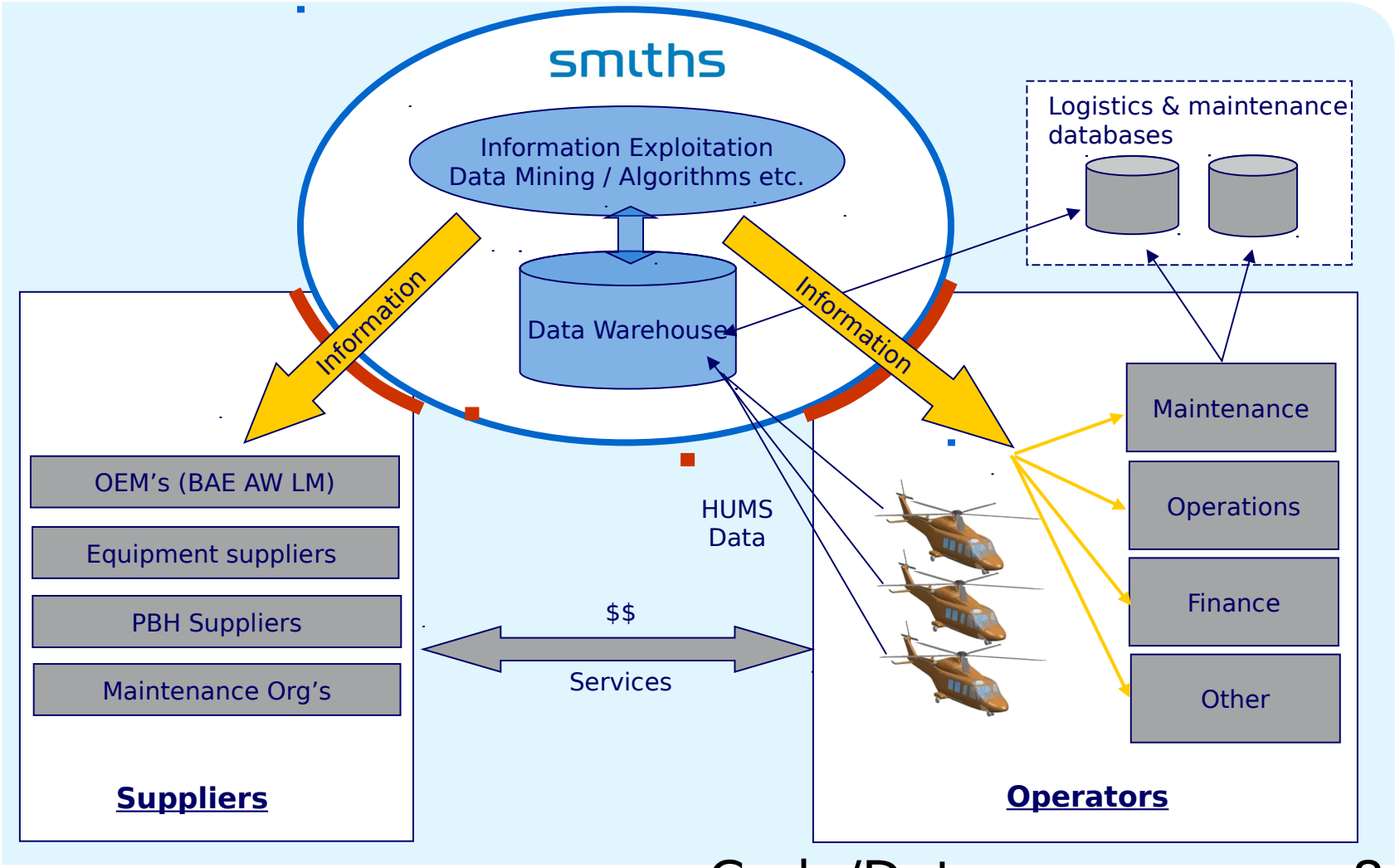

Customers source HUMS data Multiple aircraft Multiple HUMS vendors
Information exploitation using Smiths AI tools (e.g advanced anomaly detection)
Advanced interpretation / information available to customer alongside source HUMS data via web interface
Data Warehouse
Data from Insight used to support expert advice alongside automated outputs
Expert Advice

Concept of Operations



S&RL Way Ahead

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- **Much Technology for Sense and Respond exists**
  - No cohesive approach
  - Need more work on “Interpret”
- **Many issues to overcome**
  - Color of money
  - Rice bowls
  - Desire to sell more “black boxes”
- **Companies and services stove piped**
- **Focus on capability and outcomes**
  - Requires team approach
    - Services/Primes/Subs
- **Consider War fighter's Needs**
- **DoD 5000-like structure required**